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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/066,627	02/06/2002	Hitoshi Kato	33082M119	4442

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EXAMINER

GUERRERO, MARIA F

ART UNIT PAPER NUMBER

2822

DATE MAILED: 03/13/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/066,627

Applicant(s)

KATO ET AL.

Examiner

Maria Guerrero

Art Unit

2822

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 November 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) 1-6 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 February 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☒ Interview Summary (PTO-413) Paper No(s). 6.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is in response to the Election filed November 7, 2002 and the Interview dated January 10, 2003. The statutory period to reply has been restarted because Applicant originally intended to elect Species II (claims 7-12).

Claims 1-12 are pending.

Election/Restrictions

2. Applicant's election of Species II (claims 7-12) in Paper No. 4 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claims 1-6 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 4.

Priority

3. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Drawings

5. Figure 6 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mizuno et al. (U.S. 6,486,083) in view of R.C. Taylor et al. "LPCVD of Silicon Nitride Films From Hexachlorodisilane and Ammonia"

Regarding claims 7-8, Mizuno et al. teaches supplying ammonia into the reaction vessel and discharging ammonia from the reaction vessel into the exhaust pipe (col. 5, lines 55-67). Mizuno et al. teaches heating the reaction chamber at 600°C. (col. 5, lines 48-50).

Regarding the recitation in the preamble, Mizuno et al. does not specifically show supplying hexachlorodisilane into the reaction vessel. However, Taylor et al. is cited as evidenced to show that the use of hexachlorodisilane for forming silicon nitride films is well known in the art (pages 319-323).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Mizuno et al. reference by including the use of hexachlorodisilane as taught Taylor et al. The modification would provide a process of forming a good quality silicon nitride film at higher growth rates and with a less hazardous precursor. (Taylor et al., pages 319, 323).

Furthermore, the recitation "into which hexachlorodisilane and ammonia are supplied to form a silicon nitride film on workpiece" has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

7. Claim 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mizuno et al. (U.S. 6,486,083) and R.C. Taylor et al. as applied to claims 7-8 above, and further in view of Saito et al. (U.S. 6,159,298).

Regarding claims 9-10, the combination of Mizuno et al. (U.S. 6,486,083) and R.C. Taylor et al. does not specifically show heating the exhaust pipe at 100° C. or above and set the pressure in the range of 665 to 66500 Pa. However, Saito et al. teaches heating the exhaust pipe at 150° C. and employing a pressure of 5 torr (665 Pa) (col. 5, lines 60-65, col. 8, 1-3).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the combination of Mizuno et al. and R.C. Taylor et al. by including the step of heating the exhaust pipe as taught Saito et al. in order to avoid adhesion of any by-products.

8. Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mizuno et al. (U.S. 6,486,083) and R.C. Taylor et al. as applied to claims 7-8 above, and further in view of Vasudev et al. (U.S. 6,242,347).

Regarding claims 11-12, the combination of Mizuno et al. (U.S. 6,486,083) and R.C. Taylor et al. does not specifically show supplying an inert gas. However, Vasudev et al. teaches purging the chamber with inert gas (Abstract, col. 4, lines 1-3, 50-60).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the combination of Mizuno et al. and R.C. Taylor et al. by including the step of purging the chamber with inert gas as taught Vasudev et al. in order to remove particles and residual gases from the chamber (Vasudev et al., col. 4, lines 50-60).

Conclusion


9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Lee et al. (U.S. 6,495,476) teaches providing ammonia gas in the chamber. Yamaga et al. (U.S. 5,484,484) teaches the exhaust pipe connected to the reaction vessel is conventional in the art.

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10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maria Guerrero whose telephone number is 703-305-0162.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on 703-308-49055. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.


Maria Guerrero
Patent Examiner
March 7, 2003